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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,198	12/23/2004	Ken Yoshimura	Q85156	4526

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EXAMINER	
HU, HENRY S	

ART UNIT	PAPER NUMBER
1796	

MAIL DATE	DELIVERY MODE
10/28/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/519,198	YOSHIMURA ET AL.	
	Examiner	Art Unit	
	HENRY S. HU	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Election of July 21, 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) *18-25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17 and 26-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-27* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to **Election** filed on July 21, 2008. **Applicant's Election of Group I (Claims 1-17 and 26-27) without traverse** is acknowledged**.** Applicants' **two IDS'** (1 page each) are filed so far**.** This Application is a **371/PCT/JP03/07704**, which carries a Japanese priority date at June 28, 2002 **No pre-amendment is applied** so far. **Claims 1-27 with four independent claims (Claims 1, 18, 23 and 24) are now pending**, while non-elected three groups including Group II Claims 18-22 and 26-27), Group III (Claim 23) and Group IV (Claims 24-25) are all withdrawn from consideration. There are **five** "X" references cited in international search report for Applicants' priority document **EP 1,519,435 A1** to Yoshimura. An action follows.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. The limitation of parent **Claim 1** relates to ***a laminated membrane*** *comprising* ***two*** *membranes including:*

(A) a ***membrane (I)*** *which comprises* ***aromatic polymer electrolyte containing a super strong acid group*** *and*

(B) a ***membrane (II)*** *which comprises one electrolyte selected from the group consisting of* ***perfluoroalkylsulfonic acid polymer electrolytes and non-super strong acid polymer electrolytes.***

See other limitations of dependent ***Claims 2-17 and 26-27.***

4. **Claims 1-17 and 26-27** are rejected under 35 U.S.C. 103(a) as being unpatentable over **a combination of Yushimura** et al. (US 7,285,616 B2) and **Hodgdon** et al. (US 4,851,100).

The making of **laminated membrane composition** is achieved by comprising **two** different membranes (I and II) in parent **Claim 1**. In a close comparison, **Membrane I** is

related to an aromatic polymer electrolyte containing a super strong acid groups as specified in Claims 5 and 6. For instance, said **super strong acid directly attaching on aromatic ring is selected from four different formula such as (2a) sulfonic acid, (2b) disulfonimide, (2c) phosphonic acid, and (2d) phosphonic acid ester**. **Membrane II** is related to a regular perfluoroalkyl sulfonic acid-containing polymer electrolyte, which said sulfonic acid group is a pendant group on the perfluoroaliphatic backbone and is thereby NOT directly attaching on the aromatic ring. **A combination of two references including Yushimura and Hodgdon** has obviously taught such a subject matter as following:

5. **Yushimura** et al. have disclosed the preparation of two different sulfonic acid-containing polymers to be used as polymer electrolyte membranes (PEM). One PEM membrane is that sulfonic acid group is attached on perfluoroaliphatic backbone (it is noted that such PEM is thereby equivalent to Membrane II), while the other PEM membrane is that sulfonic acid group is attached onto the ring of an aromatic polymer (it is noted that such PEM is thereby equivalent to Membrane I). See **column 1, line 13-17**. Yushimura has further identified the difference between such two PEM membranes, particularly heat resistance and membrane strength. Therefore, **Yushimura is only silent about put such two different PEM membranes laminated together** as instant parent Claim 1.

6. **Hodgdon** et al. have disclosed such a subject matter in the course of making a bipolar laminated membrane. For instance, **two different polarity** PEM membranes are laminated together. One membrane is related to anion exchange membrane, while the other one is related

to cation exchange membrane (see abstract, line 1-7; column 3, line 1 – column 6, line 34). Attention is directed to the fact that two different polarity PEM membranes are laminated together. By doing so, a constant water supply to the bipolar interface and also better stability is found on PEM membrane may be effectively achieved (see column 2, line 50-55).

7. In light of **two** facts that **Yushimura and Hodgdon are both dealing with making and using two different PEM membranes as well as each membrane's polymer indeed carries different polarity due to chemical structure**, one having ordinary skill in the art would therefore have found it obvious to **combine Yushimura's two different polarity PEM membranes so as to form a laminated membrane** as taught by Hodgdon. One would expect that such a combination succeed based on many similarities are existed. Additionally, the final laminated membrane product may be more effective, particularly in its water supply to bipolar interface and its stability.

8. The disclosure of Yushimura is found to be the same as limitations of dependent Claims 2-17 and 26-27, see specification and particularly see its application to the area of fuel cell (column 24, line 38-49). For instance, **Claims 2-4** relate to structure of polymer backbone, **Claims 5-7** relate to the super strong acid group, **Claims 8-11** relate to $-(A\text{-}Z)_m-$ monomer unit from Claim 7, while **Claims 16-17** relate to Membrane II. Therefore, dependent **Claims 2-17 and 26-27** are rejected with a combination of Yushimura and Hodgdon along with the references cited therein.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. The following references relate to a laminated membrane comprising two different membranes (I and II) as specified:

US 7,128,993 B2 to Barnwell et al. only discloses the making of some composite (laminated) membranes comprising: (A) **at least one ion-conducting polymer** and (B) a network of randomly oriented individual fibers. See abstract, line 1-4; column 1, line 34-38. Although the laminated structure may be formed by several layers, the claimed membrane I by using aromatic polymer is not disclosed or suggested. See column 3, line 38 – column 4, line 47. Therefore, Barnwell fails to teach or fairly suggest the laminated membrane of present Claim 1.

10. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu** whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Vasu Jagannathan, can be reached on (571) 272-1119. The fax number for the

organization where this application or proceeding is assigned is (571) 273-8300 for all regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Peter D. Mulcahy/
Primary Examiner, Art Unit 1796

/Henry S. Hu/
Examiner, Art Unit 1796

October 26, 2008